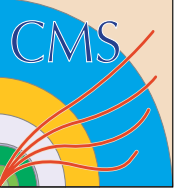# Cessy equipment and network status
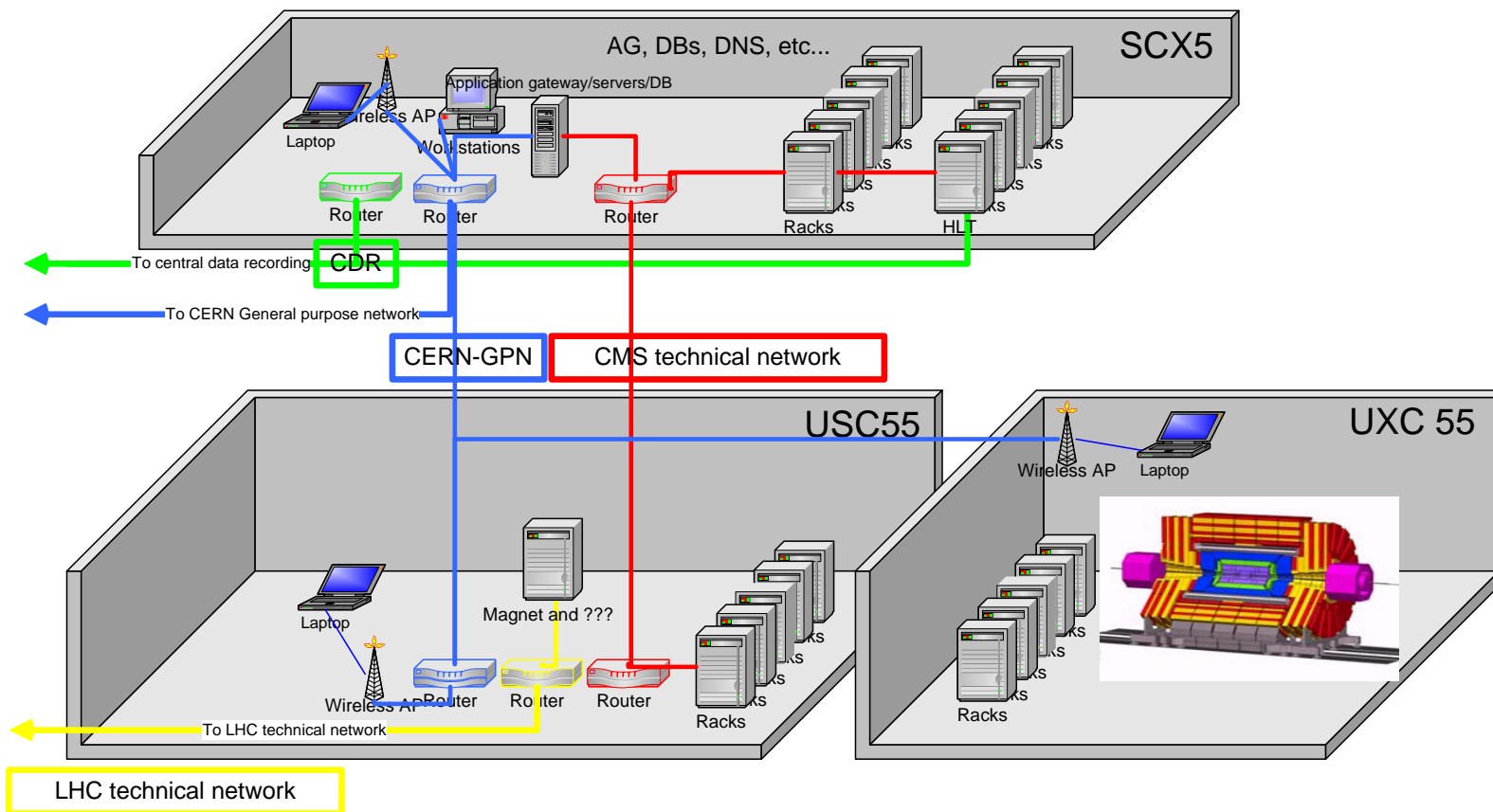
Eric Cano PH/CMD

Current status

- Networks for CMS
  - Network layout
  - Network start-up

- Network for MTCC
  - Network layout
  - Servers
  - Future

- System aspects / equipment
  - Login and home directories
  - Execution of software
  - Future
  - Hardware maintenance and reliability

CMS Network: Run

- The 4 networks
  - **CMS-Experiment Network (CMS-EN)**
 - **LHC-Technical network (TN)**
  - **CERN's general purpose network (GPN)**
  - **Central data recording (technically, a very restricted part of GPN)**
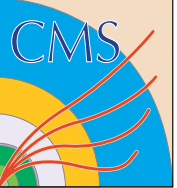
CMS Network: start-up

- Looking at getting the networks underground for beginning June (all of them, plus wireless)

- Necessary fibers available to bring the network in USC (on loan from IT)

- Temporary router in USC's starpoint (idem)

- Directly final network IP assignment

- Use of IT/CS's web interface, like in the CERN-GPN

- CMS network will be 10.176.0.0/16 (for CMS-EN), and up to 10.191.0.0/16 for all networks (DATA, etc…)
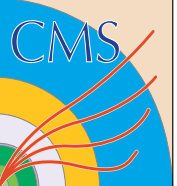
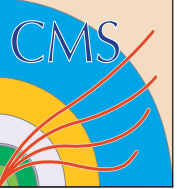# MTCC/DAQpreseries network

**head nodes
(or application gateways)**
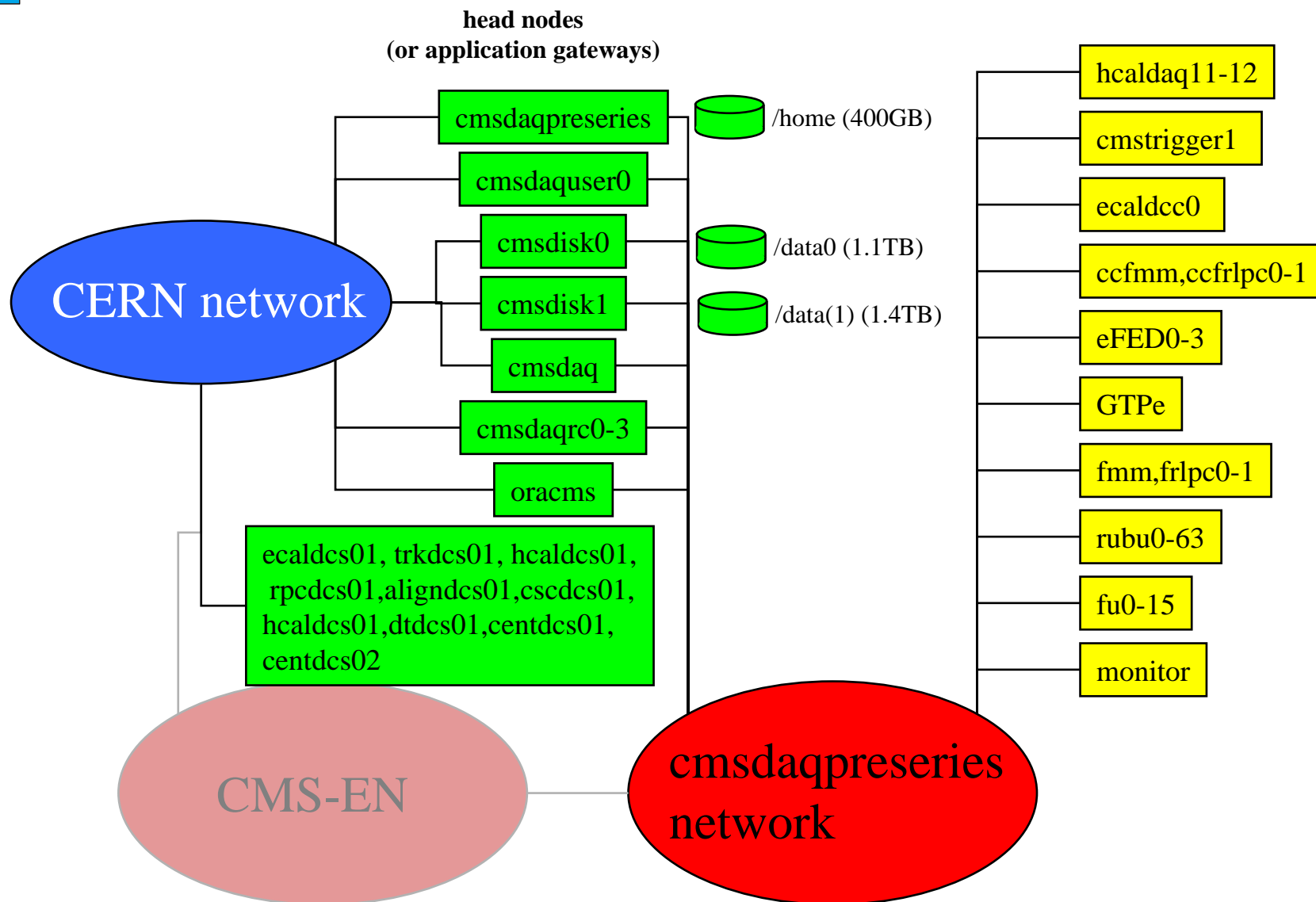
Servers (head nodes)

- cmsdaqpreseries
  - DHCP server, DNS server, LDAP server
  - logbook server
  - NFS server for home directories
- cmsdisk0 and 1
  - NFS servers for physics data and sending to CASTOR
- oracms: oracle server
- cmsdaq
  - web proxy for external access of internal pages
  - Incoming HTTP and HTTPS from outside CERN as well
- cmsdaquser0
  - General purpose login machine
- cmsdaqrc0-3
  - Run control servers
- ecaldcs01, trkdcs01, hcaldcs01, rpcdcs01,aligndcs01,cscdcs01, hcaldcs01,dtdcs01,centdcs01, centdcs02
  - DCS servers
  - Connection to preseries network not yet done, probably not required

Network evolution

- Project for CMS-EN in green barrack
 - Make cmsdaqpreseries part of CMS-EN
  - Implies IP re-numbering
  - Transparent for applications relying on DNS (normally all of them)
  - Mostly impacts the windows machines
  - "Trust" in CMS-EN for central IT windows domain servers
  - Allows move of windows machines (i.e. DCS) to the private network
    - Not on CERN network anymore
    - Depends on the controlled systems as well (???)
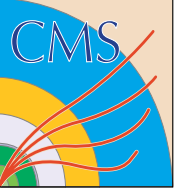
Login and home directories

- Login with the AFS account name and password on one head node

- Home directory local to cluster on /home (backed up by central IT service)

- The AFS home directory is available as well, but only on head nodes

- Ssh to nodes on the private network thanks to public/private keys in home directory
  - no AFS/Kerberos involved beyond head nodes

- No quotas for the moment
 - Rely on people's good will or not?
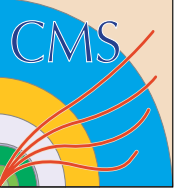
Execution of software

- Software installed in and run from home directories of common accounts
  - Currently: daqpro daqdev toppro topdev hcaldev hcalpro ecaldev ecalpro rpcdev rpcpro dtdev dtpro cscdev cscpro trackerdev trackerpro triggerdev triggerpro ltcdev ltcpro pixeldev pixelpro daqdev2

- Each common account has a corresponding group
  - Members of the group can work on the common home directory
    - Have to do: "newgrp daqpro; umask 0002"
    - Shell macros in the works (for bash and tcsh): "become daqpro"
  - Execution and stop/kill of application as the common account using sudo:
    - sudo –u daqpro xdaq.exe…

System evolution

- Login system in CMS (final) yet undecided
  - Rely on the CMS-wide AFS/Kerberos system
  - …or use our own Kerberos environment for authentication

- Deployment of software via Quattor
  - Fellow to come (has developer experience in Quattor)
  - This is required as when system grow to full size, NFS won't be able to cope anymore
  - Implies stability of software
  - Requires packaging as RPMs

Hardware maintenance and reliability

- Significant PC batches and corresponding failed hardware inventory (lower bracket estimate, machines are running 24/7)
    - Global: at least 10 power supplies not listed below.
    - 16 * MS-6132/PIII-700/256MB/HDD Quantum Fireball 10GB
        - No HDD changed
    - 16 * 370 DLE/PIII 733/256 MB/HDD Maxtor 32049H2 20GB
        - 1 HDD changed
    - 32 * P3TDLE/PIII 1GHz/256 MB/HDD Maxtor 2B020H1 20 GB
        - 9 HDD changed
        - Some CPU(s) changed
    - ~30 * X5DL8/2*Xeon 2.4GHz/512 MB/HDD Maxtor 6Y080L0 80 GB
        - No HDD changed
        - Some CPU(s) and motherboard(s) changed
    - 8 * X5DP8/2*Xeon 2.4GHz/2GB/HDD IC35L090AUU2070 80GB
        - No HDD changed
    - ~80*X5DL8/2*2.66GHz/1GB/HDD WD WD400JB-00ENA0 40GB
        - No HDD changed
        - 4 Motherboards died
        - 1 Power supply
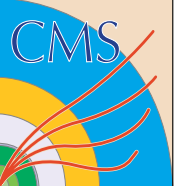
Hardware maintenance and reliability (con't)

- Clear "bad batch/good batch" patterns
- Importance of environment control (temperature)
  - from experience, AC failures are often followed by HDD or PSU failures
- Global failure rate for the "worst batches":
  - Motherboards: 5% died in almost 2 years
  - HDD: 28% died in 4 years
- Power supplies a low, continuous flow of replacement